

Claims 1-6 remain in the case.

The following is a quotation of the first paragraph of 35 U.S.C. § 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification is objected to under 35 U.S.C. § 112, first paragraph, as failing to provide an adequate written description of the invention, and failing to adequately teach how to make and/or use the invention, i.e. failing to provide an enabling disclosure.

Claims 1-6 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Applicant's specification provides no adequate teaching as to how one uses the method as claimed. The screening methodology of the instant application is disclosed as useful only for the identification of candidate agents as to their potential future therapeutic function (see e.g. pages 4-5). Inadequate guidance is presented for how to use the screening methodology because there is nothing presented in the specification which would allow one to extrapolate from the in vitro assay system to the effect one would expect in situ (i.e. intracellularly) or in vivo. It is not clear and would seem entirely unknown and unpredictable that the in vitro binding interaction between the *Plasmodium falciparum* heat shock protein of approximately 90kDa (PfHSP90) and other proteins or agents other than ATP as seen in cell lysates has any significance in the functioning of the heat shock protein. The therapeutic potential based upon the mere detection of binding is

entirely unknown because, other than inhibition of ATP binding, there would appear no art accepted mode of action that would allow one to predict from the in vitro assay that binding to the PfHSP90 would have an effect in vivo. Mere binding to a protein does not equate to binding in a manner that modulates whatever in vivo pathway that the protein affects. Many potential binding sites would be expected on a protein and thus mere binding would not correlate predictably to any in vivo result. Identification of compounds which bind, or which promote or inhibit the binding of a ligand or associated protein, which produces no biological effect resultant from the binding interaction would not serve to identify any useful therapeutic. It would therefore seem unpredictable which compounds, if any, identified with the disclosed methodology will be eventually shown to have therapeutic function. The claims are based on mere speculation that any composition identified with the in vitro screening method would be effective in vivo. In this regard, geldanamycin was ineffective against an in vivo *Plasmodium berghei* infection (DeBoer et al., J. Antibiotics 23: 442, 1970) and a monoclonal antibody that bound PfHSP90 had no inhibitory effect against the parasite in vitro (Jendoubi et al., J. Immunol. 134: 1941, 1985). Moreover, the in vivo success of any therapeutic composition is dependent not only upon a particular mode of action but also upon adequate concentrations of drug reaching the desired site of activity. Applicant provides no guidance which would allow one to predict the function of any identified agent intracellularly or in vivo. Indeed, applicant's assays even with geldanamycin appear to involve the addition of dimethylsulfoxide. There are many pharmacokinetic properties of drugs such as half-life, deactivation by the liver, binding to plasma proteins, rapid excretion, cell uptake, etc. that would need to be determined and set forth to establish in vivo function. Also, such factors as toxicity require consideration as any agent

which is capable of chemical binding, such as glutaraldehyde, may be identified as a potential agent by the disclosed method. One would not know how to use the screening methods as disclosed and claimed because one would not be assured of the ability to use any agent identified in the screening assay as a therapeutic agent in the absence of further unpredictable undue experimentation to establish a nexus between the in vitro methods and in vivo function of any identified agent.

A patent is granted for a completed invention, not the general suggestion of an idea and how that idea might be developed into the claimed invention. In the decision of *Genentech Inc. v. Novo Nordisk*, 42 USPQ 2d 1001 (CAFC 1997), the court held that: “[p]atent protection is granted in return for an enabling disclosure of an invention, not for vague intimations of general ideas that may or may not be workable” and that “[t]ossing out the mere germ of an idea does not constitute enabling disclosure.” The court further stated that: “when there is no disclosure of any specific starting material or of any of the conditions under which a process is to be carried out, undue experimentation is required; there is a failure to meet the enablement requirements that cannot be rectified by asserting that all the disclosure related to the process is within the skill of the art”, “[i]t is the specification, not the knowledge of one skilled in the art, that must supply the novel aspects of an invention in order to constitute adequate enablement.”

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-6 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-6 are incomplete, vague, and indefinite, in the use of the terms “known” and “novel” and, if an improvement to known techniques is that which is being claimed, in failing to recite all of the known prior art method steps within the preamble of the claims as set forth in 37 CFR § 1.75(e).

Claims 1-6 are method claims and, as such, they should clearly set forth the various method steps in a positive, sequential manner using active tense verbs such as mixing, reacting, and detecting. Variations of “using” are not valid method steps. These claims are indefinite because without active, positive steps delimiting how the method is actually practiced it is unclear what method/process applicant is intending to encompass. The claims should also clearly state each component used in the method and the relationship of the various components. The claims should also conclude with a step relating the method result to the purpose of the method, preferably to the purpose as also set forth in the preamble of the claim. The interrelationship of detection of bound heat shock protein to a screen for anti-malarial drugs is not clear. In these claims, “the” binding, test compound, compound bound Plasmodial 90kDa heat shock protein, amine coupling kit, unreacted moieties, change in refractive index, or BIAcore SA chip lack antecedent basis. The acronyms DMSO or TNESV should be defined at their first appearance.

Moreover, regarding claims 1-6, the phrase “such as” renders the claims indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

In claims 1-6, the term “suitable matrices” is vague as it is not clear what function is to be performed by the matrices or how one would determine what matrices are suitable.

Claims 1-6 contain the trademark/trade names Sepharose, BIACore CM5, BIACore SA, BIACore 2000, or amine coupling kit. Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name.

Claims 2-5 should recite --The assay-- for proper reference to the previously recited claim components.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
- (c) Subject matter developed by another person, which qualifies as prior art only under one or more subsections (e), (f) and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103, the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 U.S.C. § 102(f) or (g) prior art under 35 U.S.C. § 103.

Claims 1-4 and 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Jendoubi et al. (*J. Immunol.* 134: 1941, 1985) in view of Bonnefoy et al. (*Mol. Biochem. Parasitol.* 67: 157, 1994) and Banumathy et al. (*J. Biol. Chem.* 277: 3902, 2002).

Jendoubi et al. contacted lysates of *Plasmodium falciparum*-infected erythrocytes with antibodies and detected the binding of the antibodies to a 90kDa antigen, the PfHSP90 in view of Bonnefoy et al. (see e.g. page 157, Abstract, and pages 166-167), by immunoprecipitation and/or radiometric assays. In contrast to the invention as instantly claimed, Jendoubi et al. did not use saponin lysis for freeing parasites prior to extracting with detergent to form the lysates.

Banumathy et al. teach that after saponin lysis, the PfHSP90 was partially separated from host HSP90 and remained in the saponin-insoluble pellet.

It would have been obvious to one of ordinary skill in the art at the time the instant invention was made to have used saponin to free the parasites, and *Plasmodium falciparum* HSP90 in particular, from contaminating host cell proteins, as taught in Banumathy et al., prior to extraction of the *Plasmodium falciparum* HSP90 for use in the assays of Jendoubi et al., as modified by Bonnefoy et al., because one would have had obvious motivation to limit potential unwanted cross-reactions with host proteins of partial sequence identity by removing or reducing their presence in a reaction mixture prior to assaying for the presence and/or immunoreactivity of the desired protein.

Art Unit: 1641

Thus, the claimed invention as a whole was clearly prima facie obvious, especially in the absence of evidence to the contrary.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kamal et al. (WO 2003/050295) teach HSP90 binding assays.

Chiosis et al. (Chem. & Biol. 8: 289, 2001) teach HSP90 binding assays.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James L. Grun, Ph.D., whose telephone number is (571) 272-0821. The examiner can normally be reached on weekdays from 9 a.m. to 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le, SPE, can be contacted at (571) 272-0823.

The phone number for official facsimile transmitted communications to TC 1600, Group 1640, is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application, or requests to supply missing elements from Office communications, should be directed to the Group receptionist whose telephone number is (571) 272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/J. L. G./
James L. Grun, Ph.D.
Examiner, Art Unit 1641
June 18, 2008

/Long V Le/
Supervisory Patent Examiner, Art Unit 1641